Semi-annual Progress Report for
Alaska Regional Observation System Coordination
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Prepared by Molly McCammon, AOOS Executive Director
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This report briefly describes activities carried out in support of developing the Alaska Ocean Observing System (AOOS) and follows the format provided by the NOAA Coastal Services Center and Ocean.US.

1.0 Project Summary

AOOS is being planned and implemented through the collective efforts of a consortium of users including academia, federal and state agencies, non-governmental organizations, marine research entities, subsistence users, community representatives, and industry. The AOOS partners created an interim governance structure (with a Governance Committee) through a Memorandum of Agreement and established an AOOS Office with a Director co-located with the North Pacific Research Board in Anchorage. AOOS funds are managed by the Alaska SeaLife Center (dba the Seward Association for the Advancement of Marine Science). Since July 2003 AOOS staff and Governance Committee members have worked at a number of levels to further AOOS and the national Integrated Ocean Observing System (IOOS). This project builds on those efforts by working to achieve the following objectives:

- Objective 1. Assessing user needs, building a user network, and developing partnerships among users and data collectors and data managers.
- Objective 2. Developing a governance and administrative structure for a regional association that engages end users and coordinates with other observing efforts.
- Objective 3. Planning for and beginning implementation of a comprehensive integrated system that meets prioritized user needs.
- Objective 4. Developing a business/operations plan for the system to ensure that it will be cost-effective and sustainable.
- Objective 5. Establishing and sustaining a data management and communications subsystem.
- Objective 6. Developing education, outreach and public awareness components that will ensure the results are effectively applied to address the identified issues.

AOOS will initially represent the entire coastline and marine waters of Alaska. However, planning for the actual observing systems is being done based on separate regional efforts for the three Large Marine Ecosystems (LME) of Alaska (Gulf of Alaska, Bering Sea/Aleutian Islands and Arctic), with AOOS providing some functions on a statewide basis. Alaska has such a huge geographic scale and diversity of users that three separate entities will likely be essential for long-term success.

Developing and sustaining a program of this nature depends on sustained collaboration and coordination with a multitude of governmental (both state and federal) and non-governmental efforts and entails significant startup costs. Funding through this project is used to contribute to the costs of developing and sustaining the system including: staff, office and related support costs, contractual support especially data management, website development and scientific support, travel and meeting costs for AOOS staff and committee members, and planning workshops. Other funding and in-kind resources will continue to be provided by the key partners in this consortium.

2.0 Progress and Accomplishments

2.1 Regional Association Organization Structure

- The AOOS Governance Committee met on June 18, 2007 to respond to the NOAA request to reduce the AOOS Regional Coastal Observing Systems (RCOOSs) FY08 scope of work due to reduced funding, to approve the process for developing the conceptual designs for the RCOOSs, and to meet with the director of the new NOAA IOOS Program Office.
- The AOOS Governance Committee met again on October 2, 2007 to approve the AOOS conceptual design for FY 2008-2010 and identify priorities to be included in the FY 2008-2010 funding proposal.
- Alaska Department of Fish and Game Commissioner Denby Lloyd, Alaska Department of Environmental Conservation Larry Hartig, and Alaska Department of Natural Resources Deputy Commissioner Dick Lefebvre have all signed the AOOS MOA. No additional progress has been made on the revised MOA since staff was consumed with developing the AOOS conceptual designs and FY 08-10 proposal. With Craig Dorman's departure from the University of Alaska, the Governance Committee chair position is open. Vice-chair Tylan Schrock is serving as acting chair. The Governance Options Subcommittee will meet in early 2008 to revisit the governance structure.
- AOOS continues to actively participate in national IOOS planning efforts, including those of the National Federation of Regional Associations (NFRA), for which McCammon was re-elected as chair at the NFRA Board meeting in St. Petersburg, FL October 23, 2007. These activities included participation in the NFRA annual workshop in Florida October 23-25, 2007 and several meetings with the new NOAA IOOS Program Office leadership. McCammon continues to work with AOOS members and others to seek multiple and alternate sources of funding for AOOS, including the submission of numerous proposals to other funding agencies. McCammon is also a member of the national ORRAP (Ocean Research and Resources Advisory Panel), which meets 3 times a year (including June 27-28 in Washington DC). She is the interim chair of a new ORRAP ocean observing sub-panel.
- To assist with developing and reviewing the AOOS conceptual designs, a scientific-technical team was assembled, as well as a socio-economic team. The Governance Committee will be looking at whether to make these permanent groups.

2.2 Planning and Implementation

2.2.1 Business/operations Plan

- The draft conceptual designs for the statewide AOOS functions and the three AOOS Large Marine Ecosystem regions, which are a major component of the AOOS business/operations plan, were finalized in October 2007. Developing and reviewing these designs was the major staff effort these past 6 months.
- Staff prepared draft comprehensive conceptual designs by starting with the issues and products identified through the multitude of stakeholder and user outreach activities held the past 4 years. Existing observations and models to produce the products were also identified, as well as the observation and modeling gaps. These were reviewed at a workshop on August 8-9 by a Scientific-Technical Advisory Team representing broad spectrum of expertise and geographic representation. The team developed a set of priority products to be developed for the next 3-5 years on the basis of critical need and feasibility.
- In concert with these, the University of Alaska, under a contract between AOOS and the Institute of Social and Economic Research (ISER), first reviewed other programs that used some form of socio-economic criteria for developing priorities and provided guidance for doing so as part of the AOOS process.
- ISER and AOOS staff organized a Socio-Economic Team which met on September 17 and developed a suite of socio-economic criteria to use as a second filter for reviewing the priorities. These included costs, benefits, and risks.
- The AOOS board met on October 2 and used the recommendations and information from both the Scientific-Technical Team and the Socio-Economic Team to decide on the AOOS conceptual design priorities for the next 3 years.

2.2.2 Regional Coastal Ocean Observing System Priorities

- The issues and products that were used to develop the AOOS conceptual designs were based on regional stakeholder and user input from the past four years of outreach. The AOOS board used that input as well as recommendations from the Scientific-Technical Team and the additional analysis provided through the socio-economic team's process, to develop priorities for the next 3 years.

2.2.3 Regional Coastal Ocean Observing System Activities – planning and designing a comprehensive system

- **National collaborations:** AOOS continues to collaborate with other regions in helping develop the regional components of a national IOOS. These included participation in CORE (Consortium for Ocean Research and Education) activities, participation as a member of the Ocean Research Resources Advisory Panel (ORRAP), including interim chair of a new ocean observing sub-panel and ex-officio member of the federal Interagency Working Group on Ocean Observations (IWGOO).
    - In June, AOOS hosted three members of the NOAA IOOS Program Office: director Zdenka Willis, strategic planning director Timi Vann, and HF radar team lead Jack Harlan. The group met with the AOOS board, and then toured the University of Alaska Fairbanks DMAC and HF Radar group, observing activities in Kachemak Bay (including NOS lab Kasistna Bay Lab, the Kachemak Bay

NERR, and USFWS Maritime Refuge), and the Prince William Sound pilot project in Cordova.
    - AOOS Board Member Capt. Ed Page represented AOOS at the IOOS Implementation Conference on Homeland Security held in Washington DC September 24-26.
    - Daniel Doolittle, Science Director for the Kachemak Bay NERR, represented AOOS at the Estuarine Research Foundation conference in Providence, RI November 5-8.

- **Statewide:** The primary statewide role for AOOS is in data management and coordination with other observing activities. AOOS continues to be involved with numerous activities statewide.
    - AOOS and the North Pacific Research Board are partnering on a project to develop a project and metadata browser for Alaska waters called the Alaska Marine Information System.
    - McCammon participated extensively in 2 workshops as part of NOAA's ARCtic Collaboration effort.
    - AOOS staff participated in several statewide conferences including:
        - Alaska Marine Ecosystem Forum, July 25.
        - Alliance for Coastal Technology workshop on use of biological platforms for ocean monitoring, September 19-21.
        - AAAS conference in Anchorage September 24-27.
        - Alaska Climate Impact Commission hearings.
        - International Oil & Ice Workshop, Anchorage, October 10-11.
        - Alaska Sea Grant Advisory Committee annual meeting November 7-8.

- **Arctic:** With reduced funding for 2007-2008, the Barrow web cam and sea-ice radar were operated minimally with other funds. AOOS continues to participate in other agency activities relating to the Arctic which will complement development of an observing system, including:
    - Participation and coordination with the state-federal North Slope Science Initiative.
    - Presentation at Conoco-Phillips sponsored CircumArctic Planning Conference in Calgary, Alberta, October 15-18.
    - Presentation at National academy of Science's Aleutian Risk Assessment planning session October 29-30.

- **Bering Sea/Aleutian Islands:** The moorings in Bering Strait and Amukta Pass were deployed with other funding this year. Other activities include:
    - Participation in development of the joint North Pacific Research Board and National Science Foundation's Bering Sea Integrated Ecosystem Research Program.

- **Gulf of Alaska:** The focus continues on the Prince William Sound demonstration project, as well as furthering the preliminary efforts in Cook Inlet, the outer Kenai Coast, Kodiak, and Southeast. Other activities include:

- The major field trial in Prince William Sound with the objective of testing the utility of an observing system for oil spill response and search and rescue was delayed to summer 2009 due to funding uncertainties. However, a desk top experiment is in progress this year.
- Successful inclusion of Prince William Sound in a Sloan Foundation proposal for an Ocean Tracking Network. Our participation was likely to be cancelled because of the elimination of funding in the AOOS 2007-2008 budget for hydrographic surveys that were to be used for support. However, the OTN proposal is also getting off to a slow start, so we may still be able to participate depending on future funding.
- As chair of the Cook Inlet Regional Citizens' Advisory Council's Environmental Monitoring Committee, McCammon continues to work on development of the Cook Inlet component of AOOS. As part of her responsibilities, she toured the proposed Pebble Mine site, as well as a variety of oil and gas operations in Cook Inlet.

2.2.4 Data Management and Communications Subsystem

- Four small working groups of AOOS DMAC Committee members and non-members were formed after the October 2006 DMAC meeting to deal with ongoing issues that could not be solved during the meeting and will report progress at the next DMAC Committee meeting.
- AOOS co-hosted an Arctic Shelves Data Exchange Roundtable on October 11 following the International Oil and Ice Conference. The goal is to increase data sharing with the oil and gas companies active in Alaska waters. The response was very positive, with an initial focus on sea ice.
- AOOS is collaborating with the North Pacific Research Board to develop a statewide database of marine related projects, metadata, and data. As of mid-December, 2007, a complete end-to-end system from Project Browser to data interrogation to data overlay and display has been completed. With the major technical challenges of phase I solved, we are now working to populate our database with relevant projects.
- The DMAC team at UAF has also:
  - Completed fully automated backup of all data and files from both ak and db systems;
  - Added Mapserver layers for ArCOD, Codar, RAMS, web cameras, drifting buoys, and regional bathymetry;
  - Added data portal of US GODAE ARGO profile to CTD database ;
  - Created tool for extracting xyz (lon lat depth) from bathymetry data via OPeNDAP AOOS Data Extraction Tool;
  - Acquired over 10M bathymetry data profiles for all-AK database for modeling and user needs;
  - Completed georeferencing of AMSR-E data in native polar stereographic grid with animations of sea ice data;
  - Completed georeferencing and display of SAR data for Barrow test region with initial expansion to North Slope;
  - Added support to GDAL for NetCDF and HDF georeferencing attributes;
  - Completed recoding of u/v direction to wind vectors for GMT/Mapserver;

- Created custom data pages for HF radar with partial MMS support;
- Completed automatic updating, archiving, and display of Modis SST, Modis CHL, SeaWifs and AVHRR satellite data;
- Extended AVHRR data archive back in time to meet user requests;
- Acquired, archived and displayed SeaIce Mass balance data from Barrow;
- Acted as SIZONET data archive and display with supplemental NSF support;
- Acted as OBIS database entry and display with supplemental NSF support;
- Acted as BSIERP database and display with supplemental NSF support;
- Installed, tested and completed MyAOOS pages for custom page creating; and
- Delivered data streams to 7700 users.

2.3. Stakeholder and user needs identification and engagement

- Formal and informal contacts continue to be made with potential AOOS users/stakeholders in order to identify user needs and interests in AOOS. These efforts however, continue to be scaled back because sufficient IOOS funding has still not been included in federal budgets to support significant regional observing systems. We continue to be in a period of "expectation management." Our primary strategy continues to be looking for non-IOOS funds to start up programs while waiting for future IOOS funding.
- The following presentations and briefings were given during this reporting period:
  - Alaska Marine Ecosystem Forum, July 25
  - USGS Headquarters team, including director Mark Meyer, July 26
  - Presentation at Conoco-Phillips sponsored CircumArctic Planning Conference in Calgary, Alberta, October 15-18.
  - Presentation at National Academy of Science's Aleutian Risk Assessment planning session October 29-30.

2.3.1. Education, outreach and public awareness activities

- The AOOS website continues to be updated with new data sets and information products.
- McCammon is the lead PI for a proposal to NSF for an Alaskan COSEE (Centers for Ocean Sciences Education Excellence). AOOS has partnered with the Alaska SeaLife Center, the Alaska Sea Grant Program, and the University of Alaska on this proposal.
- McCammon participated in the Ocean Research and Resources Advisory Panel meeting in Washington DC in June and has organized an ocean observing sub-panel.
- Education team lead Nora Deans presented on behalf of AOOS at the National Marine Educators Association conference in Portland Maine July 26-27.
- McCammon was interviewed by the National Weather Service for its Alaska Weather Channel.
- McCammon serves on the Alaska Sea Grant Advisory Committee, and participated in the ASG Strategic Plan review subcommittee.
- McCammon spoke to a marine biology class at the University of Alaska Anchorage October 9.
- McCammon participated in a panel on reporting on science issues as part of the Alaska Broadcasters Conference.
- McCammon and Nora Deans participated in the steering committee for the 2008 Alaska Marine Science Symposium.

- Nora Deans has been participating in the IOOS Key Themes and Messages Working Group during this time frame as part of a national two-year effort.
- McCammon and Alaska Sea Grant agent Torie Baker participated in an Alliance for Coastal Technologies workshop hosted by the Alaska Sea Life Center in September to analyze technical challenges with environmental sensing equipment currently in use with marine mammals and fish.

3.0 Scope of Work (Plans for the next year)

3.1. Stakeholder/user needs identification and engagement new

- Continue with approach to three Alaska regions and sub-regions based on Large Marine Ecosystem (LME) concept.
- Continue to work with other collaborative efforts in Alaska such as the Alaska RISA (Alaska Center for Climate Assessment and Policy), the North Slope Science Initiative, the Exxon Valdez Oil Spill Trustee Council, the North Pacific Research Board, and the Alaska Marine Ecosystem Forum.
- Reassess the makeup of the AOOS Governance Committee and development of stakeholder advisory committees to ensure adequate stakeholder representation and communication.
- Work with MMS, federal and state regulatory agencies, and oil and gas industry on plans relating to offshore oil and gas development in the Bering, Beaufort, and Chukchi Seas.
- Organize meeting of all sea ice researchers in spring 2008.
- Work with UAF remote sensing group on developing products for Alaska users.
- Work with Alaska Sea Grant to further user product development from Prince William Sound pilot project. Website tools configured specifically for sport fishing charter and recreational users have been constructed and reviewed internally. User testing in Anchorage and Fairbanks is scheduled for spring 2008.
- Continue to participate in coastal erosion and coastal climatology planning efforts with the National Weather Service, NOAA climate office, and others.
- Participate in NOAA's regional collaboration team and Hydrographic Services working group.
- Continue activities with CIRCAC Environmental Monitoring Committee.

3.2. Governance and administrative structure

- Convene Governance Options Subcommittee with state participation. Complete revisions to new MOA to address any state concerns. Meet with EPA and FEMA regarding AOOS membership.
- With state involvement, we can now proceed with these activities: develop set of operating procedures for AOOS board and committees to use; consider need for 501 (c) (3) corporation, and if so, conduct legal work; and consider approach to scientific-technical advice and stakeholder/user committees based on LMEs along with committee mission and terms of reference.

3.3. Business/operations plan

- All of the components described above (Governance, DMAC, education & outreach, stakeholder engagement, and coastal observing system activities) continue to progress. The AOOS business/operations plan will integrate these efforts.
- The conceptual designs for the statewide functions and the 3 RCOOSs are now in final draft (they are considered "living" documents, and as such, will always be under development) and posted on the AOOS website.
- We are working with NFRA and the NOAA IOOS Program Office to identify the actual plans that will be required for the regional associations and the associated timeline for their production. During the past 2 years, we have seen discussion of numerous planning documents: implementation, strategic, business, operations, data management, education, outreach, etc., and it has become very confusing as to what these entail and what is actually required and by when and to whom.

3.4. DMAC activities

- DMAC has been working with a staff of three FTEs plus a partial satellite and HF Radar manager and a grad student. Funding for the satellite/HF radar position and grad student were eliminated due to funding cuts, and the 3 full-time positions have only 10.5 months of salary for the next year. A new position has begun to address acquisition of fisheries data and develop the Alaska Marine Information System (a joint initiative with the North Pacific Research Board and UAF), but future funding of that is uncertain. These reductions in the DMAC staff, plus the elimination of all equipment and travel funds, will seriously compromise the ability of DMAC to grow in the next year.
- The DMAC Committee will meet in spring 2008.
- IOOS activities
    - Continued participation with IOOS ET Metadata and Archive teams – but may be limited due to funding constraints. AOOS Data management is seeking contact with NODC to work on the Archive component.
    - Completed recent data transport project with NOAA CSC DTL. Awaiting next project. NOAA CSC requested updates to the CIR.
    - AOOS an active participant in the IOOS Observation Registry. We are waiting for the next phase of this project.
- DMAC staff will continue data management collaboration with AEFF, NMFS, PMEL and ArcOD for integration of datasets between AOOS and agencies as staff resources are available.
- The AOOS group will continue to build the Alaska Marine Information System (AMIS) database using NPRB, AOOS, and the Bering Sea Integrated Ecosystem Research Project data as a priority. Our next major goal is to demonstrate the full capability of the browser from end-to-end at the NPRB Board meeting at the end of April, 2008.

3.5. Education, outreach and public awareness activities

- The majority of funding for education and outreach was included in the AOOS COTS grant, and due to funding reductions, those elements have been cancelled.
- Continue to work with Alaska Sea Grant Marine Advisory Program to develop outreach & public awareness plan, as part of AOOS business/implementation plan.
- Implement Alaska COSEE proposal if funded.

- Continue website development.
- Continue to work with Alaska Sea Grant MAP agent for PWS to hold stakeholder focus groups to improve PWS web page and user products.
- Develop brochures and other publications.
- Use the Communicating Ocean Sciences workshop at the 2008 Alaska Marine Science Symposium to further AOOS outreach and education activities.
- Participate in education working group as part of NOAA Collaboration Team.
- Nora Deans will continue to participate in the IOOS Key Themes and Messages Working Group during this time frame as part of a national two-year effort.

3.6. Regional Coastal Ocean Observing System Implementation Activities

- Funding reductions in the AOOS RCOOS grant will require major reductions in current implementation activities. The program has been cut in half, losing all programmatic elements outside of the PWS model development and DMAC activities. This has resulted in a loss to the program of more than a year's work and seriously compromised our ability to keep momentum going in Alaska.
- Statewide: Conceptual design for statewide components has been developed. The primary focus of AOOS continues to be development of its DMAC sub-system and education and outreach activities.
- Arctic RCOOS: AOOS continues to collaborate with a number of IPY efforts, including NSF's new Arctic Observing Network and the proposed international Sustained Arctic Observing Network (SAON) and a proposed Arctic GOOS. AOOS is collaborating with Dr. Tom Weingartner on a recently funded NOPP proposal providing ocean circulation monitoring using buoys and HF radar. These will likely be minimum efforts due to funding and staffing issues.
- Bering Sea/Aleutian Islands RCOOS: Continue to participate with NOAA, NPRB, USGS, and NSF on BSAI integrated research plans and proposals. Met with state-federal Marine Ecosystem Forum to determine information needs for Aleutian ecosystem management pilot project. Will hold a Bering Sea stakeholder workshop sometime in the next 2 years.
- Gulf of Alaska RCOOS: Conceptual design is complete. We are continuing with a minimal effort for the PWS pilot project (largely due to the support of OSRI), and working towards tying the pieces together if funding is available in the next 2 years.

4.0 Leadership Personnel

There have been no additional changes in key scientific or management personnel since the last report.

5.0 Budget Analysis

All financial reports are up to date and have been submitted on time.